

START

NON-INTRUSIVE ACTIVITIES
100-HR-1 Operable Unit RFI/CMS
August 1989 to April 15, 1990

The following tasks on the 100-HR-1 Operable Unit RFI/CMS will begin between the present time and approximately April 15, 1990, when final approval of the draft Work Plan for the 100-HR-1 Operable Unit is expected. These tasks are all non-intrusive in nature, and many of them are intended to identify drilling targets. Thus, delays in completing these tasks could impact the ultimate completion of the drilling program, once the Work Plan is approved.

Phase I RFI - Initial Operable Unit Characterization

Subphase 1A RFI - Initial Operable Unit Characterization

Procedures: This has not been identified as a separate task in the draft Work Plan. However, in light of comments subsequently received on the WHC EII's it has become obvious that most procedures will need to at least be reviewed, and many of them may need to be supplemented. New procedures will need to be developed for activities (e.g., electromagnetic survey) for which no procedures currently exist.

Task 1 - Source Investigation

This task will consist of six subtasks designed to identify, locate more accurately, and initially characterize, the potential sources of contamination in the 100-HR-1 Operable Unit.

Subtask 1a - Source Data Compilation

This subtask will consist of two activities:

1. A literature search to consist of review of all available data, which will include engineering plans, environmental reports and databases, decommissioning reports, and photographs. Any additional data that becomes available and is deemed pertinent also will be included.
2. Meetings and Operable Unit visits with former and current personnel to help verify contaminant locations, quantities, etc.

Subtask 1b - Topographic Mapping

This task will consist of surveying control points in the 100-HR-1 Operable Unit (the survey will likely include the 100-HR-2 Operable Unit) and photogrammetry to produce a topographic base map.

This task will also consist of land surveying to place panels for the aerial survey, establish precise coordinates of features

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detected in other subtasks (the electromagnetic survey, the ground penetrating radar survey, the process effluent pipeline survey, and the surface radiation survey), and converting the coordinates into NAD-83.

Subtask 1c - Electromagnetic Survey

This is a surface geophysical survey which, in the draft Work Plan, is discussed as a "one-time event" to help locate the process effluent pipeline. It is proposed to change the work scope to include using the electromagnetic surveying method to help locate additional buried structures that are reported to have contained significant amounts of metallic rebar, and also to attempt to map contaminant plumes. These additions and changes are based on site information which has become available since the publication of the draft Work Plan. This would mean that the electromagnetic survey would not be restricted to a "one-time event;" it would be run, as necessary, whenever evidence of a subsurface structure became available.

Subtask 1d - Ground Penetrating Radar Survey

This is also a surface geophysical survey which, in the draft Work Plan, is discussed as a "one-time event" to help locate the 1607-H-2 and 1607-H-3 septic tanks and their associated tile field, the 116-H-7 sludge burial tank, and the 116-H-4 Pluto Crib. Similar to the electromagnetic survey, it is proposed that the ground penetrating radar survey not be restricted to a "one-time event," but that ground penetrating radar surveys may be used to help locate several other subsurface features as well, as evidence of their existence becomes available.

Subtask 1e - Process Effluent Pipeline Integrity Assessment

This subtask will consist of two activities - mobilization and a remote camera inspection. The mobilization activity will consist of gathering information on several available cameras and/or methodologies and recommending the best one(s) to try. The remote camera inspection will consist of running the remote camera(s) inside the pipeline to gather evidence on leaks, ruptures, etc. A limited amount of excavation will be required to provide access to the pipeline.

Subtask 1f - Septic Tank Sludge Sampling and Analysis

This subtask will consist of collecting three samples each from the 1607-H-2 and 1607-H-3 septic tanks and sending them to the laboratory for analysis. The purpose of this task is to determine to what degree (if any) the septic tanks are acting as sources of contamination, and thus to determine how much (if any) additional investigation in their vicinity will be required. A limited amount of excavation will be required to provide access to the septic tanks.

Task 3 - Soil Investigation

Subtask 3a - Surface Radiation Survey

This subtask consists of two activities - a background surface radiation survey, and a surface radiation survey of the entire operable unit. The purpose of the background radiation survey is to establish a baseline for determining what level of readings will, or will not be considered contaminated within the operable unit. The purpose of the operable unit survey will then be to scan the entire site and stake and flag for further investigation, any areas which exhibit radioactivity readings above background.

At the present time, a change will be requested in the location of the background radiation survey from that proposed in the draft Work Plan. The location proposed in the Work Plan is somewhere immediately west (generally upwind) of the 100-HR-1 Operable Unit. The problem with this location is that it is also immediately downwind from at least the D & DR reactors and almost certainly will have been contaminated by their emissions. Thus, any survey in this area will almost certainly come under future criticism as not being representative of true background.

Task 4 - Air Investigation

Subtask 4a - Meteorological Data Compilation

This subtask consists of the coordination and compilation of existing climatic data.

Task 5 - Terrestrial Biological Investigation

Subtask 5a - Terrestrial Biological Data Compilation

This subtask involves compilation of Hanford Site terrestrial biological data specific to the 100-HR-1 and similar areas as well as compilation of general terrestrial ecological information.

Subtask 5b - On-Site Terrestrial Biological Survey

This subtask involves quarterly field surveys of the 100-HR-1 Area. Major species will be confirmed.

Task 6 - Data Evaluation

Subtask 6a - Source Data Evaluation

Under this subtask, the results of the ground penetrating radar, electromagnetic survey, septic tank sludge, remote camera inspection of effluent pipelines, and surface radiation surveys

will be compiled to evaluate the current status of waste units in the 100-HR-1 Area.

Subtask 6d - Air Data Evaluation

Data compiled from existing meteorological stations will be formatted and analyzed to present numerical descriptions of long-term average climatic conditions, including annual and seasonal variations, and frequencies and magnitudes of extreme weather events.

Subtask 6e - Terrestrial Biological Data Evaluation

Major terrestrial species present in and near 100-HR-1, as determined through Subtasks 5a and 5b, will be tabulated. Feeding relationships among species will be presented graphically in the form of a generalized food web. Potential indicator species and ecological indicators also will be presented tabularly.

Task 7 - Verification of Contaminant - and Site-Specific ARAR's

The formulation of operable unit-specific ARAR's is an ongoing process throughout the RFI/CMS. As 100-HR-1 becomes better characterized during the course of the Phase I RFI, the pertinence of the potential contaminant-and location-specific ARAR's, and possibly other potential ARAR's, becomes more apparent. Once the nature and levels of contamination attributable to 100-HR-1 are sufficiently well defined to the degree that the project staff believes the potential ARAR's to be properly identified, Ecology and EPA will be asked to verify the potential contaminant-and location-specific ARAR's. Project staff will work with the regulatory agencies and, taking operable unit-specific conditions into account, will decide which promulgated environmental standards, requirements, criteria, and limitations are actually applicable or relevant and appropriate to 100-HR-1.

Subphase 1B RFI - Additional Operable Unit Characterization

Task 4 - Baseline Risk Assessment

Subtask 4a - Contaminant Identification

The purpose of this subtask is to screen the nature and extent of contamination data, and to identify target contaminants for the risk assessment. Target contaminants will be selected based upon the available environmental occurrence data, intrinsic toxicological properties, and waste volumes.

Subtask 4b - Exposure Assessment

The exposure assessment will determine the type and magnitude of potential contaminant exposures to human and environmental receptor

populations based upon preliminary data. This assessment will be performed in accordance with the "Superfund Exposure Assessment Manual," OSWER Directive No. 9285.5-1 (EPA, 1988).

Subtask 4c - Toxicity Assessment

The purpose of this task is to assess the risks associated with the release of contaminants, a comparison will be performed between the acceptable levels of contamination and the actual levels identified in the exposure assessment. Contaminant-specific ARAR's, when available, will be used to determine acceptable levels. When ARAR's are not available, acceptable levels will be based on either regulatory advisories or guidance values (to-be-considered values or TBC's) or on environmental concentrations.

Subtask 4d - Risk Characterization

The final subtask of the baseline risk assessment involves the characterization of risks whenever the potential for adverse human health or environmental impacts are predicted for a receptor population. A summary of the risks posed by 100-HR-1 Operable Unit will be generated.

Task 5 - Phase I RFI Report: Preliminary Summary

This report will consist of a preliminary summary of the results of the operable unit characterization activities conducted to date. Information pertinent to the operable unit conceptual model will be refined as necessary, sources of contaminant releases will be preliminarily identified, the nature and extent of contamination within the environmental media of the operable unit will be described. A preliminary list of contaminant-and location-specific ARAR's will be presented, and the preliminary risks associated with the contaminant releases will be presented.

NON-INTRUSIVE ACTIVITIES
100-HR-3 Operable Unit RFI/CMS
August 1989 to April 15, 1990

The following tasks on the 100-HR-3 Operable Unit RFI/CMS between the present time and approximately April 15, 1990, when final approval of the draft Work Plan for the 100-HR-3 Operable Unit is expected. These tasks are all non-intrusive in nature. Some of these tasks will only be initiated prior to Work Plan approval, and will be completed at a later date.

Procedures: This has not been identified as a separate task in the draft Work Plan. However, in light of comments subsequently received on the WHC EII's it has become obvious that most procedures will need to at least be reviewed, and many of them may need to be supplemented. New procedures will need to be developed for activities (e.g., aquatic biota sampling) for which no procedures currently exist.

Task 1 - Source Investigation

This task is designed to identify and locate potential sources of contamination contributing to the 100-HR-3 Operable Unit. Areas to receive emphasis are those not currently being investigated under other work plans and include 100-DR-2, 100-DR-3, 100-HR-2, and 100-IU-4.

This task will consist of two activities:

1. A literature search to consist of review of all available data, which will include engineering plans, environmental reports and databases, decommissioning reports, and photographs. Any additional data that becomes available and is deemed pertinent also will be included.
2. Meetings and Operable Unit visits with former and current personnel to help verify contaminant locations, quantities, etc.

Task 2 - Geologic Investigation

Field geologic mapping will be performed to delineate topographic features, distribution and nature of soil units, surficial deposits, occurrence of structural features, etc.

Task 4 - Groundwater Investigation

Subtask 4a - Data Compilation and Project Coordination

Considerable data on geohydrology and groundwater quality/contamination within the 100-HR-3 Operable Unit exist from past and ongoing studies. Existing groundwater data applicable to the

100-HR-3 Operable Unit will be compiled, integrated, evaluated, and assembled into a computer database.

Investigations of other source operable units within 100-HR-3 (especially those containing liquid waste disposal sites) are expected to progress concurrently. Operations among the several investigations will be coordinated to prevent duplication of effort and to ensure that data use is optimized.

Task 5 - Surface Water and Sediment Investigation

Subtask 5a - Relative Data Compilation

Data applicable to the 100-HR-3 Operable Unit concerning Columbia River water sediment will be obtained, inventoried, evaluated, and assembled. Specific data useful or necessary in interpreting data obtained through this investigation may be entered into a computer database to facilitate data comparisons, manipulation, and presentation. Hydrologic data from the U.S. Geological Survey's gauging station located just below Priest Rapids Dam will be included. Information relative to the river stage and discharge in the vicinity of the 100-HR-3 Operable Unit will also be obtained. Data relative to Columbia River water and sediment quality along the 100-HR-3 Operable Unit will be included, as will applicable riverbank spring data. The information gathered will be useful in characterizing the Columbia River environment near the 100-HR-3 Operable Unit, in determining optimum sampling times and locations, and in interpreting data obtained through this investigation.

Subtask 5b - Radiation Surveys

Radiation surveys will be performed, using portable low-level gamma radiation detectors, along the exposed shoreline within the operable unit, including the island shorelines. In addition; the exposed shoreline within the White Bluffs slough area located near the downstream boundary of the 100-HR-3 Operable Unit will be surveyed. Sediment samples will be collected from those areas observed to have elevated exposure rates (>25 mrem/h) to determine the contributing radionuclide(s) and their concentration(s) in the sediments.

Subtask 5c - Water and Sediment Sampling

Water and sediment samples will be collected from active riverbank springs or seepage areas. Sampling will be conducted during periods of low river flow to maximize the potential for the seep to be actively flowing. The 100-HR-3 Operable Unit shoreline will be visually inspected for the presence of riverbank springs and near-shore submerged springs. Active springs will be identified on appropriate maps, and the sites will be surveyed, with coordinates and elevation documented. Samples of the seep water will be collected from active flows located above the river level.

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Field measurements will be made to determine the seep-water temperature, pH, conductivity, and nitrate concentration. Samples of the spring sediments will be collected in addition to water samples. Near shore river water samples will be taken near spring sampling locations.

Installation of water-level-stage recorder will be completed. Operation will be ongoing throughout the 100-HR-3 RFI/CMS.

Task 7 - Biota Investigation

Aquatic Biota

Several different organisms/communities will be collected and analyzed for potential contaminants. The organisms/communities include periphyton, macrophytes, benthos, and fish.

Permanent sampling stations will be established to assess, pinpoint, and determine the effects of contaminants emanating from sources in the 100-HR-3 Operable Unit. Sampling of periphyton, rock benthos, and red-sided shiners will be done at five permanent sampling transects, extending from the shoreline toward the middle of the Columbia River.

Task 8 - Data Evaluation

Data collected from the source, groundwater, surface water and sediment, radiation, and biota investigations will be compiled and integrated to evaluate the current status of the 100-HR-3 RFI/CMS.

Task 9 - Baseline Risk Assessment

Subtask 9a - Contaminant Identification

The purpose of this subtask is to screen the nature and extent of contamination data, and to identify target contaminants for the risk assessment. Target contaminants will be selected based upon the available environmental occurrence data, intrinsic toxicological properties, and waste concentrations.

Subtask 9b - Exposure Assessment

The exposure assessment will determine the type and magnitude of potential contaminant exposures to human and environmental receptor populations based upon preliminary data. This assessment will be performed in accordance with the "Superfund Exposure Assessment Manual," OSWER Directive No. 9285.5-1 (EPA, 1988).

Subtask 9c - Toxicity Assessment

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The purpose of this task is to assess the risks associated with the release of contaminants, a comparison will be performed between the acceptable levels of contamination and the actual levels identified in the exposure assessment. Contaminant-specific ARAR's, when available, will be used to determine acceptable levels. When ARAR's are not available, acceptable levels will be based on either regulatory advisories or guidance values (to-be-considered values or TBC's) or on environmental concentrations.

Subtask 9d - Risk Characterization

The final subtask of the baseline risk assessment involves the characterization of risks whenever the potential for adverse human health or environmental impacts are predicted for a receptor population. A summary of the risks posed by 100-HR-3 Operable Unit will be generated.

Task 10 - Preliminary RCRA Facility Investigation Report

This report will consist of a preliminary summary of the results of the operable unit characterization activities conducted to date. Information pertinent to the operable unit conceptual model will be refined as necessary, sources of contaminant releases will be preliminarily identified, the nature and extent of contamination within the environmental media of the operable unit will be described. A preliminary list of contaminant-and location-specific ARAR's will be presented, and the preliminary risks associated with the contaminant releases will be presented.